



MARICOPA COUNTY ENVIRONMENTAL SERVICE DEPARTMENT

WATER & WASTE MANAGEMENT DIVISION

ONSITE WASTEWATER SYSTEMS PROGRAM

1001 North Central Avenue, Suite 150, Phoenix, AZ 85004

Phone: (602) 506-6666 Fax: (602) 506-6925

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**SITE INVESTIGATION AND SOILS EVALUATION FOR AN  
ON-SITE WASTEWATER TREATMENT FACILITY INSTRUCTIONS**

**INSTRUCTIONS**

A site/soils evaluation is a comprehensive investigation to determine the suitability of the site for the on-site wastewater treatment facility (OSWTF). This is a two-part investigation: 1) Identify any limiting conditions which may affect the size, type and location of the OSWTF and 2) Evaluate the soils to establish a Soils Absorption Rate (SAR).

MCESD staff can conduct the site and soils evaluation for trench, chamber or leach bed disposal. Arizona-registered engineers, geologists or sanitarians (with prior MCESD approval) may also conduct the evaluations or percolation tests. If the proposed disposal method is a seepage pit, the site evaluation and seepage pit performance test must be conducted by an Arizona-registered engineer or geologist. Site evaluations conducted by persons other than MCESD staff must be submitted on the [ADEQ Site Investigation Report Form](#).

**IT IS THE RESPONSIBILITY OF THE PROPERTY OWNER AND THEIR CONTRACTOR TO KEEP THE CONSTRUCTION SITE SAFE**

- To keep humans and animals from harm, stake-off, secure and protect the test holes with caution ribbon, flags, wood planks, plywood, chain link fencing or any similar material, easily removable for the soil evaluation inspection and easily replaced when the inspection has been completed.
- Post a sign at the entrance to the property, minimum of 3' square with 4"-6" lettering. The lettering must state the septic permit number, the owner's name, the parcel number and street address if available.
- Excavate three (3) test holes on the site: two (2) in the proposed primary disposal area and one (1) in the proposed reserve disposal area. The test holes must be 5' deeper than the proposed overall depth of the disposal field and at least 12' deep. Stockpile the tailings from each of the test holes in two separate piles. The top ½ of the excavation must be placed closest to the hole and the bottom ½ of the excavation must be placed farthest from the hole. A total of six (6) stockpiles should be at the site and available for inspection. Label each stockpile to indicate at what depth the material was excavated. Do not drill test holes-use a backhoe.
- If test holes have not been excavated to a minimum of 12' and at least 5' deeper than the proposed overall depth of the disposal field, the effective depth for disposal will be limited and will increase the size of the disposal area. **ADDITIONAL TESTING AND FEES WILL BE REQUIRED** if re-inspection of the test holes is necessary because the original test holes were not excavated to the minimum depth and lot size or physical characteristics at the site restrict the usable area for primary and reserve disposal areas. Re-inspection will delay the approval process.
- If you encounter water or refusal, contact this office for further instructions.
- Clearly stake the corners of the property with markers that are easy to see from the proposed disposal areas.
- Clearly stake corners of the proposed structure(s).
- If applicable, stake the proposed well site with a marker that can be seen from the proposed disposal areas.
- Request an inspection by phone (602-506-1787), e-mail ([SepticQuestions@mail.maricopa.gov](mailto:SepticQuestions@mail.maricopa.gov)), on-line (<http://www.maricopa.gov/FormCenter/Environmental-Services-16/Onsite-Wastewater-Systems-Program-Inspec-90>) or fax (602-506-6925). Have the permit/tracking number and address available and provide any special instructions or requests (e.g. call to meet at site, gate code).
- If you have questions or need other assistance call 602-506-6616 or e-mail [SepticQuestions@mail.maricopa.gov](mailto:SepticQuestions@mail.maricopa.gov).

## PERMIT APPLICATION PROCESS NOTICE

Steps required to obtain a Phase I (Site Investigation) approval are as follows:

1. **Submit Phase I application** signed by the property owner or agent. Include all supporting documentation and applicable fees. A permit/tracking number will be issued. The permit/tracking number identifies the project and is used for rapid access to the file for: inquiries, information, status, voice mail message or inspection requests. The permit/tracking number remains the same for all phases of the project.
2. **Identify** the site by posting a sign at the entrance to the property. The sign should be a minimum of 3' square with 4"-6" lettering. The sign must include the owner's name, street address (if available) and the permit/tracking number provided at the time of Phase I application.
3. **Clearly** mark the property corners, proposed house corners and, if applicable, well site.
4. **Prepare** three (3) 12' deep test holes-two (2) in the proposed primary disposal area and one (1) in the proposed reserve area. Instructions for the preparation of the test holes for evaluation are included with this packet.
5. **Request an inspection** by phone (602-506-1787), e-mail ([SepticQuestions@mail.maricopa.gov](mailto:SepticQuestions@mail.maricopa.gov)), on-line (<http://www.maricopa.gov/FormCenter/Environmental-Services-16/Onsite-Wastewater-Systems-Program-Inspection-90>) or fax (602-506-6925). Have the permit/tracking number and address available and provide any special instructions or requests (e.g. call to meet at site, gate code).
6. **Site and soils evaluations** are conducted by MCESD to establish a Soils Absorption Rate (SAR). The SAR is used when designing and sizing the on-site system. The evaluation also includes a physical description of the site. The inspector will leave a yellow tag at the site when the inspection is completed.
7. **Inspection results**, including the SAR and any limiting conditions at the site relating to the selection, design and layout of the on-site system are provided to the property owner or agent by MCESD.
8. **Property owner or agent** uses the inspection results to design the septic system and complete the Phase II (NOID) application packet.

Per Maricopa County Health Code, this application will expire:

- a) one year from the date of application, or
- b) one year from Phase I (Site Investigation) approval

### Department contact information regarding your application

Telephone: 602-506-6616, ask for the Onsite Program

E-mail: [SepticQuestions@mail.maricopa.gov](mailto:SepticQuestions@mail.maricopa.gov)

Website: <http://www.maricopa.gov/2484/Onsite-Wastewater-Septic-Systems>

You may request a clarification from the Department of its interpretation or application of a statute, ordinance, regulation, delegation agreement or authorized substantive policy statement as provided in A.R.S. §11-1609. Contact us by e-mail or telephone, or in person or mail at the address listed at the top of the page, marked attention Onsite Wastewater Program.

**LICENSING TIME FRAMES**

Permit Category	Overall time (business days)
Alteration	30
Alteration with Inspection	30
Composting Toilet <3000 Gal/Day	73
Septic Tank with Additional Alternative Features	95
Septic Tank, Conventional Disposal <3000 Gal/Day	73
Aerobic System with Surface Disposal	95
Onsite Wastewater Treatment Facility, Flow 3000 to <24000 Gal/Day	136
Reconnect/Remodel Review (Minor Plan Review)	30
Reconnect/Remodel Review (Minor Plan Review) with Inspection	30

**FEES\*\*\*****BASE ONSITE FEES**

Onsite System Site Inspection	\$325
Onsite Additional Inspection	\$325
Septic Tank Conventional Disposal, less than 3,000 gal/day*	\$550
Onsite System Alteration Permit	\$205
Onsite System Alteration Permit and Two Inspections	\$400
Onsite System Reconnect/Remodel Review (Minor Plan Review)	\$205
Onsite System Reconnect/Remodel Review and One Inspection	\$400
Onsite Aerobic System with Surface Disposal	\$1,050
Septic Tank with One Additional Alternative Element**	\$1,050
Septic Tank with More Than One Additional Alternative Element**	\$1,050
Each Additional Alternative Element	\$250
Onsite System Design Requiring Interceptor	\$200 per interceptor
Onsite Facility with Flow from 3,000 to less than 24,000 gal/day	\$1,800
Composting Toilet, less than 3,000 gal/day	\$400
Onsite System Abandonment/Closure	\$175

**DOMESTIC WELL APPROVAL**

Domestic Well Location Approval (ADWR Form)	\$175
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**REVIEW AND COMPARISON OF REVISIONS TO APPROVED CONSTRUCTION OR DISCHARGE AUTHORIZATION**

Onsite System Plan Revision	\$205
Planning and Development Plan Review	\$80

**REQUEST FOR CHANGE PERMITTED BY RULE**

Onsite System Request for Alternate Design, Installation or Operational Feature (A312.G)	\$75
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**TRANSFER OF OWNERSHIP**

Onsite System Transfer of Ownership	\$50
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**OPERATING PERMIT FOR OPERATION AND MAINTENANCE RECORD REVIEW AND SYSTEM INSPECTION**

Individual Onsite Treatment Plant Operating Permit (Alternative/Engineered Systems)	\$100 per year
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**INVESTIGATION**

Investigation: Onsite	\$130 per hour
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**EXPEDITED PLAN REVIEW**

Expedited Plan Review Fees (Requires prior Program Management Approval)	Two Times the Fee for that Category
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\* Gravity-fed trenches, seepage pits, leach beds or chambers. Includes up to three (3) plan reviews and three (3) construction inspections.

\*\* These alternative disposal elements are for all systems of less than 3,000 gal/day and include: pressure distribution, gravelless trenches, natural seal evapotranspiration beds, Wisconsin Mounds, engineered pad, intermittent sand filters, peat filters, Ruck® Systems, sewage vaults, aerobic systems with surface or subsurface disposal, cap systems, constructed wetlands, sand-lined trenches, disinfection devices, sequencing batch reactors, and subsurface drip irrigation systems.

\*\*\*Excerpt from Maricopa County Environmental Health Code. For the entire fee schedule go to: <http://www.maricopa.gov/DocumentCenter/View/5500>

FOR QUESTIONS REGARDING THESE FEES, CONTACT MCESD, WWMD 602-506-6666

**A.R.S §11-1604. Prohibited acts by county and employees; enforcement; notice**

A. A county shall not base a licensing decision in whole or in part on a licensing requirement or condition that is not specifically authorized by statute, rule, ordinance or delegation agreement. A general grant of authority does not constitute a basis for imposing a licensing requirement or condition.

B. Unless specifically authorized, a county shall avoid duplication of other laws that do not enhance regulatory clarity and shall avoid dual permitting to the maximum extent practicable.

C. This section does not prohibit county flexibility to issue licenses or adopt ordinances or codes.

D. A county shall not request or initiate discussions with a person about waiving that person's rights.

E. This section may be enforced in a private civil action and relief may be awarded against a county. The court may award reasonable attorney fees, damages, and all fees associated with the license application to a party that prevails in an action against the county for a violation of this section.

F. A county employee may not intentionally or knowingly violate this section. A violation of this section is cause for disciplinary action or dismissal pursuant to the county's adopted personnel policy.

G. This section does not abrogate the immunity provided by section 12-820.01 or 12-820.02.

## TYPICAL APPROVAL PROCESS FOR A CONVENTIONAL ONSITE WASTEWATER TREATMENT FACILITY

1. **Submit Phase I application** signed by the property owner or agent. Include all supporting documentation and applicable fees. A permit/tracking number will be issued. The permit/tracking number identifies the project and is used for rapid access to the file for: inquiries, information, status, voice mail message or inspection requests. The permit/tracking number remains the same for all phases of the project.
2. **Identify** the site by posting a sign at the entrance to the property. The sign should be a minimum of 3' square with 4"-6" lettering. The sign must include the owner's name, street address (if available) and the permit/tracking number provided at the time of Phase I application.
3. **Clearly** mark the property corners, proposed house corners and, if applicable, well site.
4. **Prepare** three (3) 12' deep test holes—two (2) in the proposed primary disposal area and one (1) in the proposed reserve area. Instructions for the preparation of the test holes for evaluation are included with this packet.
5. **Request an inspection** by phone (602-506-1787), e-mail ([SepticQuestions@mail.maricopa.gov](mailto:SepticQuestions@mail.maricopa.gov)), on-line (<http://www.maricopa.gov/FormCenter/Environmental-Services-16/Onsite-Wastewater-Systems-Program-Inspec-90>) or fax (602-506-6925). Have the permit/tracking number and address available and provide any special instructions or requests (e.g. call to meet at site, gate code).
6. **Site and soils evaluations** are conducted by MCESD to establish a Soils Absorption Rate (SAR). The SAR is used when designing and sizing the on-site system. The evaluation also includes a physical description of the site. The inspector will leave a yellow tag at the site when the inspection is completed.
7. **Inspection results**, including the SAR and any limiting conditions at the site relating to the selection, design and layout of the on-site system are provided to the property owner or agent by MCESD.
8. **Property owner or agent** uses the inspection results to design the septic system and complete the Phase II (NOID) application packet.
9. **Submit** NOID application—signed by the property owner. Include all supporting documentation and applicable fees. The permit/tracking number remains the same for all phases of the project.
10. **Review** of the NOID submission in accordance with applicable rules and regulations is done by MCESD.
11. **A Construction Authorization** is issued for the installation of the on on-site system, citing any required stipulations. MCESD will release the Maricopa County Planning and Development Department building permit, if applicable.
12. **Notification** of the owner by phone, fax or e-mail when the Construction Authorization is ready to be picked up at the office. After 30 days, unclaimed Construction Authorizations will be mailed to the owner.
13. **A Contractor**, licensed by the State of Arizona, installs the system according to the approved plans.
14. **Submit Request** for Discharge Authorization (Yellow Form) to schedule final inspection.
15. **Final Inspection** by MCESD conducted to verify the installation is in accordance with the Construction Authorization, including a water tightness test on the septic tank and an open trench inspection. For Alternative systems, if stipulated in the Construction Authorization, the design engineer may submit stamped and signed as-built drawings for review and approval.
16. **Approved** construction inspection results in the issuance of a White Tag, which is placed at the site.
17. **Disapproved** construction inspection results in the issuance of a Red Tag, which is placed at the site.
18. **Deficiencies** are corrected by the contractor and a request for a re-inspection is made. For Alternative systems, the design engineer will submit revised stamped and signed plans for review.
19. **A Discharge Authorization** is issued to the owner by MCESD upon completion of an administrative review.
20. **Operation and Maintenance** by the owner keeps the onsite system in good operational condition.

## TYPES OF CONVENTIONAL ON-SITE WASTEWATER DISPOSAL SYSTEMS

**General Information:** Sewage disposal of individual homes that lie outside a public sewer district can be accomplished by on-site wastewater treatment facilities commonly called septic systems. A conventional septic system will consist of two parts: a tank to capture the solids and grease and a drain field or disposal area to dispose of the liquid. The type of drain field will depend on the soil characteristics and site conditions. The most common type of drain field for disposal of wastewater from septic tanks are trenches, seepage pits, leach beds and chamber technology.

1. **SEEPAGE PITS:** R18-9-E302(A)(2) and (C)(5): A seepage pit is a drilled pit, no less than 48" and no greater than 72" in diameter that is filled with aggregate. The depth of the pit(s) is based on the design flow and soil absorption rate (SAR) for that particular site. (Design flow means the daily flow rate a facility is designed to accommodate. See R18-9-101 for further definition). The seepage pit may only be installed in valley-fill sediments in a basin and range alluvial (moved by water) basin. You can determine if your location is acceptable for seepage pits here: <http://gisweb.azdeq.gov/arcgis/alluvium/>. It must also be established that the site satisfies the minimum vertical separation test. Once these criteria have been proven acceptable, the pit must then pass a seepage pit performance test. For a seepage pit to be considered for disposal, the following documentation must be submitted with the NOID application:
  - a) A detailed report, prepared by an Arizona-registered Engineer or Geologist, certifying the site has sufficient valley-fill sediments in a basin & range alluvial (moved by water) basin for the seepage pit to perform properly.
  - b) Written test procedures and results from a seepage pit performance test conducted in accordance with R18-9-A310. See R18-9-A312E for more information.
  - c) Site Investigation Report identifying any limiting conditions
  - d) Drill logs, well logs or records from Arizona Department of Water Resources identifying the depth of seasonal high water table.
2. **TRENCHES:** R18-9-E302(A)(2) and (C)(2): One or more trenches filled with aggregate. Trenches may be 12" to 36" wide, have a maximum overall depth 5' less than the depth of the test holes and a maximum length of 100'. Trenches over 100' in length shall be split into two or more trenches of equal length to provide a more even distribution of wastewater and better absorption by the soils. Minimum separation between trench edges (undisturbed soil) is twice the effective depth (the distance between the bottom of the distribution pipe and the bottom of the trench) or 5', whichever is greater. See R18-9-A312(D) for more information.
3. **LEACH BED:** R18-9-E302(A)(2) and (C)(3): A shallow disposal field, which is filled with aggregate. The bed width is between 10' and 12' with 2 distribution lines. The maximum overall depth is 60" and the maximum length is 100'. MCESD highly recommends splitting up the system into multiple, shorter beds to provide more suitable distribution of wastewater. In calculating the size of the leach bed use the soil absorption rate specified in R18-9-A312(D) for "SAR, Bed."
4. **CHAMBER TECHNOLOGY:** R18-9-E302(A)(2) and (C)(4): This method of disposal uses an Arizona Department of Environmental Quality-approved chamber as the filter media rather than aggregate. The chambers are placed in shallow trenches. All chambers must be installed per ADEQ-approved directions.

## SOIL EVALUATION AND TESTING BY TYPE OF DISPOSAL SYSTEM

**SITE INVESTIGATION R18-9-A310(C) and (D):** A site investigation consists of a visual examination identifying any surface or subsurface limiting site conditions, as stated in R18-9-A310(B), that may interfere with the operation of an on-site wastewater disposal system. The information obtained from a site investigation is used in conjunction with the soil analysis to locate, select and design an on-site wastewater disposal system.

MCESD staff can conduct the site and soils evaluation for trench, chamber or leach bed disposal. Arizona-registered engineers, geologists or sanitarians (with prior MCESD approval) may also conduct the evaluations. If the proposed disposal method is a seepage pit, the site evaluation and seepage pit performance test must be conducted by an Arizona-registered engineer or geologist. Site evaluations, percolation tests and/or seepage pit performance tests conducted by persons other than MCESD staff must be submitted on the [ADEQ Site Investigation Report Form](#).

**TEST HOLE EVALUATION R18-9-A310(C), (D) and (E):** The evaluation of three (3) test holes will determine the characterization of the soils and will establish a soil absorption rate (SAR) to be used in calculating the size of the septic system disposal area. The Aquifer Protection Permit Rule describes the approved methods for determining soil characteristics.

**PERCOLATION TESTS R18-9-A310 (F):** Arizona-registered engineers, geologists or sanitarians (with prior MCESD approval) may conduct percolation tests. A percolation test is a water absorption test conducted in the primary disposal (two test holes) and reserve disposal (one test hole) areas. Percolation test hole: The percolation test hole shall be 12" x 12" square or 15" round, presoaked with clean water 16 to 24 hours in advance of the actual test as stated in Rule. This test may be used solely or in conjunction with a test hole analysis to determine the soil absorption rate (SAR) to be used in calculating the size of the disposal system. Percolation test results are reported in minutes per inch.

**SEEPAGE PIT PERFORMANCE TEST R18-9-A310 (G):** *MCESD staff does not conduct seepage pit performance tests.* The site evaluation and seepage pit performance test must be conducted by an Arizona-registered engineer or geologist. The primary and reserve disposal areas must be noted on the site plans. In the primary area only, conduct the test in a minimum 18" in diameter hole and at least 30' deep or to the depth of the proposed seepage pit, whichever is greater. Presoak the hole with clean water to a point 36" below the land surface. Observe as per R18-9-A310(G)(2). The actual test is conducted by refilling the hole with clean water to the same point as for the presoak and measuring the drop in the water level in 10-minute increments. The final numbers will represent a soil absorption rate (SAR) to be used in calculating the size and number of seepage pits to be installed at the site. Seepage pit performance test results are reported in minutes per inch. (The full testing and reporting procedure can be found below.)

### SEEPAGE PIT PERFORMANCE TESTING (R-18-9-A310(G))

An investigator shall test seepage pits described in R18-9-E302 as follows:

1. Planning and Preparation. The investigator shall:
  - a. Identify primary and reserve disposal areas at the site. A test hole at least 18 inches in diameter shall be drilled in the primary disposal area to the depth of the bottom of the proposed seepage pit, at least 30 feet deep.
  - b. Scarify soil surfaces within the test hole and remove loosened materials from the bottom of the hole.
2. Presoaking procedure. The investigator shall: **(include details with the NOID submittal)**
  - a. Fill the bottom six inches of the test hole with gravel, if necessary, to prevent scouring;
  - b. Fill the test hole with clean water up to three feet below the land surface.
  - c. Observe the decline of the water level in the hole and determine the time in hours and minutes for the water to completely drain away.
  - d. Repeat the procedure if the water drains away in less than four hours. If the water drains away the second time in less than four hours, then the seepage pit performance test shall be conducted following subsection (G)(3).
  - e. Add water to the hole and maintain the water at a depth that leaves at least the top three feet of hole exposed to air for least four more hours if the water drains away in four or more hours;
  - f. Not remove the water from the hole before the seepage pit performance test if there is standing water in the hole after at least 16 hours of presoaking.
3. Conducting the test. The investigator shall: **(include details with the NOID submittal)**
  - a. Fill the test hole with clean water up to three feet below land surface.
  - b. Observe the decline of the water level in the hole and determine and record the vertical distance to the water level from a fixed reference point every 10 minutes. The investigator shall ensure that the method for measuring water level depth is accurate and does not significantly affect the rate of fall of the water level in the test hole.
  - c. Measure the decline of the water level continually until three consecutive 10-minute measurements indicate that the infiltration rates are within 10%. If measurements indicate that infiltration is not approaching a steady rate or if the rate is close to a numerical limit specified in R18-9-A312(E), an alternate method based on a graphical solution of the test data shall be used to approximate the final stabilized infiltration rate.
  - d. \*Submit the seepage pit performance test results to the Department, including:
    - i. Data, calculations, and findings and all supporting on a form provided by the Department.
    - ii. The log of the test hole indicating lithologic characteristics and points of change; and
    - iii. The location of the test hole on the site investigation map.
  - e. Fill the test hole so that groundwater quality and public safety are not compromised if the seepage pit is drilled elsewhere or if a seepage pit cannot be sited at the location because of unfavorable test results.

\* In addition, MCESD requires that the following items are included with the seepage pit test results:

1. The field worksheets recording all procedures in detail.
2. Identification on the site plan where the seepage pit performance test(s) were conducted, including measurements to at least two adjoining property lines.